

IN THE UNITED STATES PATENT
AND TRADEMARK OFFICE

APPLICATION FOR
UNITED STATES UTILITY PATENT

POWER SYSTEMS

Extra Set Claims - 1-15 - For PTO Examiner

INVENTORS
HENRY A. LOTT
JOHN B. GOSS

1 CLAIMS:

2 1. A method for producing electrical power the method
comprising

3 producing a water/methanol mixture,
4 feeding the water/methanol mixture to converting
5 apparatus for converting said mixture to a feed stream, the
6 feed stream comprising hydrogen, carbon dioxide, and steam,
7 recovering hydrogen from the feed stream and feeding
8 said hydrogen to combusting apparatus,
9 combusting the hydrogen in the combusting apparatus
10 producing power for powering a turbine,
11 powering the turbine with said power, the turbine
12 having an exhaust that includes steam,
13 driving an electrical generator with the turbine to
14 produce electricity, and
15 recovering steam from the exhaust of the turbine and
16 condensing said steam to produce condensed steam and feeding
17 said condensed steam into the converting apparatus.

1 2. The method of claim 1 further comprising
2 cooling the combusting apparatus with cooling
3 apparatus.

1 3. The method of claim 2 wherein the cooling apparatus
2 comprises water jacket cooling apparatus.

1 4. The method of claim 2 wherein the hydrogen is recovered
2 from the feed stream by PSA apparatus.

1 5. The method of claim 1 further comprising
2 feeding air to the combusting apparatus to serve as
3 combustion air for the combusting apparatus.

1 6. The method of claim 1 wherein heat from the condensed
2 steam provides heat to the converting apparatus.

3 7. A method for producing electrical power the method
4 comprising

5 producing a water/methanol mixture,
6 feeding the water/methanol mixture to converting
7 apparatus for converting said mixture to a feed stream, the
8 feed stream comprising hydrogen, carbon dioxide, and steam,
9 recovering hydrogen from the feed stream and feeding
10 said hydrogen to combusting apparatus,
11 combusting the hydrogen in the combusting apparatus
12 producing power for powering a turbine,
13 powering the turbine with said power, the turbine
14 having an exhaust that includes steam,
15 driving an electrical generator with the turbine to
16 produce electricity,
17 recovering steam from the exhaust of the turbine and
18 condensing said steam to produce condensed steam and feeding
19 said condensed steam into the converting apparatus, and
20 cooling the combusting apparatus with cooling
apparatus.

1 8. The method of claim 7 wherein the cooling apparatus
2 comprises water jacket cooling apparatus.

1 9. The method of claim 7 wherein the hydrogen is recovered
2 from the feed stream by PSA apparatus.

1 10. The method of claim 7 further comprising
2 feeding air to the combusting apparatus to serve as
3 combustion air for the combusting apparatus.

1

1 11. A system for powering a turbine, the turbine for driving
2 an electrical generator for producing electricity, the system
3 comprising

4 a hydrogen producing subsystem, the hydrogen
5 producing subsystem fed with a water/methanol mixture and including
6 converting apparatus and recovery apparatus, the converting
7 apparatus for producing from the water/methanol mixture a feed
8 stream, the feed stream including hydrogen, carbon dioxide and
9 steam, the recovery apparatus for producing hydrogen from the feed
10 stream,

11 a combusting subsystem for combusting hydrogen to
12 produce power, the combusting subsystem fed with hydrogen
13 produced by the recovery apparatus,

14 a turbine powered by the power produced by the
15 combusting subsystem, the turbine having an exhaust including
16 steam,

17 an electrical generator driven by the turbine to
18 produce electricity,

19 condensing apparatus for receiving steam from the
20 turbine exhaust and producing condensed steam therefrom and
21 feeding the condensed steam to the converting apparatus.

1 12. The system of claim 11 further comprising
2 cooling apparatus for cooling the combusting
3 subsystem.

1 13. The system of claim 12 wherein the cooling apparatus
2 comprises water jacket cooling apparatus.

1 14. The system of claim 11 wherein the recovery apparatus is
2 PSA apparatus.

1 15. The system of claim 11 further comprising
2 an air supply system for the combusting subsystem.